



## UTAH PUBLIC FINANCE WEB SITE SOLUTION ARCHITECTURE ALTERNATIVES

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### INTRODUCTION

S.B. 38 modified the Utah Administrative Services Code by providing that certain public financial information be made available on the Internet, and creates the Utah Public Finance Web Site (UPFW). The site is to be operational not later than May 15, 2009. The bill specifies the following requirements of the site:

- Permit Utah taxpayers to view, understand, and track the use of taxpayer dollars by making financial information from participating State entities available on the Internet;
- allow a user with Internet access to use the site without paying a fee;
- allow a user to search public financial information using criteria established by the Utah Transparency Advisory Board;
- provide access to financial reports, financial audits, budgets, or other financial documents that are used to allocate, appropriate, spend, and account for government funds;
- have a unique and simplified Web site address;
- be accessible from the official State Web site at Utah.gov; and,
- include other links, features, or functionality that will assist the public in obtaining and reviewing public financial information, as may be established by rule under *Utah Code 63A-3-404*.

The original fiscal notes for this bill carried estimates from \$514 to \$664 thousand dollars. The bill was funded at a \$125,000 dollar level. The reduced funding necessitates a review of alternative approaches for delivering the site as required by the Legislature within budgetary constraints.

### ALTERNATIVE DEVELOPMENT APPROACHES

The primary assumptions for successful site development under existing funding including:

- Funding should go primarily to site development and leverage existing infrastructure to the extent practicable.

- Ongoing site costs in future years can be funded to add functionality, but ongoing operational costs need to be minimized.
- The relatively tight timeline for gathering requirements, gaining Board approval, prototyping, development, and testing speak to the need for minimizing development learning curves, and tightly defining requirements.

From a complexity perspective, the site is comparable to the recently released Utah Public Meeting Web Site. Development conclusions are based on that assumption. The primary development concerns focus on establishing expectations for user capabilities, the user interface for the site, and establishing appropriate data handling processes. Initial UPFW site functionality for the May 15, 2009 rollout will need to be constrained within available resources.

The following development approaches have been identified. These approaches are not listed in any order of priority. The recommended approach will follow.

- Development of the UPFW by existing DTS and Division of Finance employees using existing infrastructure with no substantive infrastructure or licensing investments.
- Development of the UPFW by existing DTS and Division of Finance employees with a substantive infrastructure and licensing investment, using existing Cognos data warehouse technologies and a related Business Intelligence deployment of Cognos for public access with all hosting handled by DTS at approved rates. This option assumes the Division of Finance will handle the Web development components and access to data.
- Development of the UPFW with Utah Interactive (UI) under the provisions of the PD1068 Statewide contract. UI would provide Web development with a resulting Java based application and hosting services. The Division of Finance would provide data exports for the UPFW.
- Development of the UPFW using existing MC1015 contract resources in coordination with Division of Finance and DTS staff.

To meet development timelines, FY2009 development activities will be constrained to the inclusion of:

- State agency expenditure data;
- Statewide contract expenditure data;
- State payroll data;
- access to existing higher education financial data; and,
- basic search functionality.

Future development phases will be designed based upon direction from the Advisory Board and funding availability.

#### ANALYSIS AND RECOMMENDATIONS

Since the funding is the same for all four of the alternatives previously identified, the primary analysis is based upon staying within available financial resources, meeting legislative timelines, and releasing a high quality best in class site for public access to financial information.

- **Alternative 1:** DTS and Division of Finance development using existing infrastructure and existing COGNOS development technology. There is a risk that the project may not be completed within available staff and funding resources. Infrastructure investment and ongoing costs may be required. Security risks would be higher with this option if the data was accessed on existing equipment. Risk of negative impact on State users is higher under this option.
- **Alternative 2:** DTS and Division of Finance development with investment in separate infrastructure using COGNOS development technology. Funding and staff resource availability may not be sufficient for this option. This option provides extensive functionality, but will require a Cognos public license that will use 50% of available funding. User interface issues and Web site development complexity is higher because of the potential added capabilities that would be exposed to users. Security risks are lower because the data accessed by the public would be on separate equipment. Additional database infrastructure investments would be needed to meet database hosting and security requirements. This option provides little or no funding for development; expenditures focus primarily on infrastructure. Ongoing operational expenses may not be sustainable within existing funding.
- **Alternative 3:** Development with UI in cooperation with DTS and the Division of Finance as an approved e-Government development project. All development and hosting is handled under the PD1068 contract with reasonable ongoing hosting expense. This alternative is based upon an export approach to consuming Utah financial information for the UPFW and as such provides the lowest level of security risk for State financial data. As an approved priority project, UI would be authorized to invest additional resources and funding beyond the funding approved by the Legislature. The probability of meeting development and timeline expectations is high. The quality of the UPFW developed under this alternative is also likely to be high. This option places the majority of approved funding into UPFW development and leverages skill sets of UI, the Division of Finance, and DTS in what appear to be optimal ways. Additional funding for ongoing operational expenses may be needed. Data may not be updated as often using this option.

- **Alternative 4:** Development of the UPFW using an external contractor. Funding is insufficient to ensure timely site development and additional resources would be required for hosting and storage. The probability of success with this option is low.

All of these options require involvement from the Division of Finance to be successful and requires timely approval decisions by the Board and Division of Finance so that timelines can be met. Alternative three is the DTS recommended option and seems to guarantee the highest probability of success within the requirements of the legislation. This approach to the development of the UPFW assumes an enterprise approach to site development and ongoing maintenance leveraging four main participants:

- Utah Interactive (UI) has the contract for development of public access Web applications and development and maintenance of Utah.gov. The group is skilled with Java application development, design, user accessibility and database access, and reporting applications. UI will be responsible for requirements definition, prototyping for Board and Division of Finance approval, development, and testing in cooperation with DTS and the Division of Finance.
- DTS is responsible for hosting of the Web and application server environments and related storage infrastructure in the Richfield and Salt Lake City data centers that will be utilized by UI for the UPFW deployment.
- The Division of Finance is responsible for providing data and for acting as the application owner for UPFW. They have ongoing responsibility for establishing and validating business requirements and working with DTS and UI as part of the development team.
- The Utah Transparency Advisory Board provides governance and overall direction for site services and requirements. The Board will need to provide timely guidance and approvals for the project timeline.

Once the Board has affirmed the development approach, a detailed timeline, solution architecture, and engineering validation document will be developed. UI will begin development of a Product Requirements Document (PRD) that will detail the functional requirements of the UPFW. These three documents will be provided for Board approval.

## APPENDIX A: TECHNICAL REQUIREMENTS

The following technical requirements have been identified, based upon information from the Legislative Fiscal Analyst (LFA), the Division of Finance, and the Department of Technology Services.

### General Requirements

The Utah Public Finance Web Site:

- will be developed in compliance with State Web standards and guidelines;
- will be accessible to Utah citizens with disabilities;
- will have its own unique and simplified URL;
- will be accessible from the Utah.gov homepage; and,
- will provide user help functions through online help.

### Data and Data Integration

- The Utah Public Finance Web Site will be database driven.
- The site should provide reports based on financial data provided by the Division of Finance. Data can be provided as exports based upon update criteria established by the Transparency Advisory Board.
- Archived information for prior fiscal years will follow standard Division of Finance requirements for archiving fiscal year financial data consistent with the intent of the Legislation.

### Search Capability and Reports

- The site must have search capabilities. AJAX search or links functionality will be provided for access to other government sites that provide financial information and for all predefined financial reports.
- The site must provide search capabilities for data and reports by:
  - agency or entity name;
  - fiscal year;
  - expenditure type;
  - payee;
  - date; or,
  - other criteria as approved by the Board.
- Information submitted to the site must be preserved for archival purposes and for searchable public access to financial data for fiscal years after July 1, 2008.

## Hosting

- The site must scale to support internal and external user needs, and as such should be designed to support up to 1,000 concurrent users.
- The UPF Web site will be hosted at the Salt Lake City data center with a failover and disaster recovery implementation in Richfield.
- The UPF Web site will have sufficient network or directly connected storage to meet all database and attached storage requirements.

## Reports

Users must be able to easily access financial reports using defined site search or link functionality and predefined reports.

## Notifications and Updates

The site must support e-mail notifications and user selected RSS feeds for ongoing notification of agency financial reports.

## ARCHITECTURE

The main architecture components are as follows:

- **UPF Web Site:** This is the main public access Web site for finding meeting notices, preferably implemented as a Java Web application.
- **AJAX UPFW Search:** This is an existing AJAX search function that will search the UPF databases for pre-defined reports and agency financial information.
- **UPFW Custom Search Engine (CSE):** This is a Google CSE that will provide search functionalities and appropriate search refinements for searching the UPFW documents available on other State and local Web sites.
- **UPFW Repository:** This is the master export repository database for State of Utah financial information provided by the Division of Finance.
- **UPFW Web Services:** These are Web services that are provided to facilitate query and report preparation, and access to contract documents. The UPF Web site application will use these services to provide site functionality.
- **UPFW Web and Application Servers:** These are standard application and Web server environments already in use within the State and Utah e-Government environments.

## TECHNOLOGY ARCHITECTURE PLATFORM STACK

- **Use Assumptions:** 1,000 users with a 10% concurrency.
- **Application Server:** Java Application server environment.
- **Deployment Environment:** Dedicated server.
- **Scalability:** Horizontally scalable by adding additional server resources.
- **Software:** Java application written within a JEE5 development environment.
- **Database Repository:** MySQL
- **Data Storage Platform:** Direct attached storage for working data and application files.
- **Unstructured Data Platform:** Network attached storage for access to Division of Purchasing contract documents.
- **Reusable Web Services:** Query Types, Contract Access Type, Subscribe, and RSS as needed (Estimated at 6-9 Web services).

## ENGINEERING DESIGN REQUIREMENTS AND VALIDATION

The site has no substantial issues from a design perspective other than standard UI and public accessibility considerations. Public site access is primarily concerned with making the information accessible per the legal requirements for the site. The Division of Finance has already developed capable practices for handling and migrating data. These practices need to be applied to the UPFW implementation.